

RESEARCH PAPER

How do minimum cigarette price laws affect cigarette prices at the retail level?

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Objectives: Half of US states have minimum cigarette price laws that were originally passed to protect small independent retailers from unfair price competition with larger retailers. These laws prohibit cigarettes from being sold below a minimum price that is set by a formula. Many of these laws allow cigarette company promotional incentives offered to retailers, such as buydowns and master-type programmes, to be calculated into the formula. Allowing this provision has the potential to lower the allowable minimum price. This study assesses whether stores in states with minimum price laws have higher cigarette prices and lower rates of retailer participation in cigarette company promotional incentive programmes.

Design: Retail cigarette prices and retailer participation in cigarette company incentive programmes in 2001 were compared in eight states with minimum price laws and seven states without them. New York State had the most stringent minimum price law at the time of the study because it excluded promotional incentive programmes in its price setting formula; cigarette prices in New York were compared to all other states included in the study.

Results: Cigarette prices were not significantly different in our sample of US states with and without cigarette minimum price laws. Cigarette prices were significantly higher in New York stores than in the 14 other states combined.

Conclusions: Most existing minimum cigarette price laws appear to have little impact on the retail price of cigarettes. This may be because they allow the use of promotional programmes, which are used by manufacturers to reduce cigarette prices. New York's strategy to disallow these types of incentive programmes may result in higher minimum cigarette prices, and should also be explored as a potential policy strategy to control cigarette company marketing practices in stores. Strict cigarette minimum price laws may have the potential to reduce cigarette consumption by decreasing demand through increased cigarette prices and reduced promotional activities at retail outlets.

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Cigarette companies use price discounts and promotional allowances extensively to stimulate product sales in stores. These account for 88% of the record \$12.5 billion spent by cigarette companies to market their products in 2002,¹ and include a variety of incentives offered by cigarette companies to retailers to promote product sales and enable cigarette companies to exert control over advertising and the placement and pricing of their products in stores.^{2–4} Cigarette prices can be manipulated by the cigarette companies with price discounts through buydowns (or rebates), which are “cents off” sales on existing inventory for limited time periods, and through price discounts on volume orders that are often packaged in master-type contracts such as the Philip Morris Retail Leaders Program.¹

A large body of evidence shows that increased cigarette prices lead to reduced cigarette consumption.⁵ A study of industry documents reveals that cigarette companies often responded to state cigarette tax increases and other tobacco control efforts by discounting cigarette prices.⁶ Thus, promotional incentives, such as buydowns and master-type programmes, are important tools that tobacco companies can employ to negate the loss of sales and subsequent decreases in cigarette consumption that can result from these tobacco control policy initiatives.

Policies that restrict the use of these types of promotional incentives may be one mechanism to protect the public health impact of higher cigarette prices. In the USA, 25 states have minimum purchase price laws that apply to cigarette sales.⁷ These laws are best understood as a special type of unfair competition law. Most, if not all, of these minimum

price laws originated between the 1940s and '60s, and were designed to eliminate the cigarette companies' use of predatory and/or discriminatory business practices, such as loss leader marketing and discriminatory promotions. For instance, a wholesaler might give one store owner favourable terms, but deny them to other store owners. These laws appear to be designed mainly to protect cigarette sellers with higher costs of doing business (for example, small, independently owned stores) from price competition from larger retailers with lower overhead (for example, chains, large discount stores).⁷ Thus, minimum price laws arose to protect business not public health. Nevertheless, one report estimated that the application of minimum price laws may reduce cigarette consumption by 2–3% because of higher prices.⁷

Minimum price laws contain formulas that specify wholesale and retail markups in calculation of the minimum price of cigarettes (fig 1). Typically, the wholesaler's price is calculated as the manufacturer's list price plus the state excise tax plus the wholesaler's cost of doing business (usually between 2–6%). Then, the retailer's price is calculated as the wholesaler's price minus trade discounts plus the retailer's cost of doing business (usually between 5–10%, except for Massachusetts where it is 25%). Each business has the option to show that its cost of doing business is lower than the statutory presumption.⁷

If wholesale and retail markups were similar across states, one might expect higher retail cigarette prices in states with minimum price laws than in states without minimum price laws (assuming both groups of states have identical state

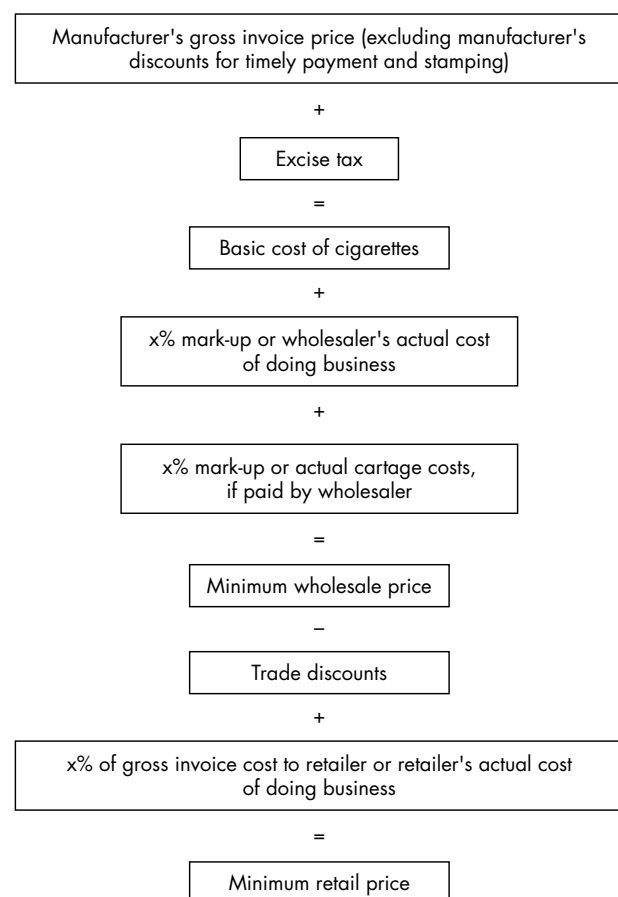


Figure 1 Calculation of minimum cigarette sale prices. Adapted from: Michael J. *The Unfair Cigarette Sales Act*. St Paul, Minnesota: Minnesota House of Representatives, Research Department, September 2000.

excise taxes). However, nearly all of these minimum price laws allow promotional incentives, such as buydowns and master-type programmes, to be subtracted as trade discounts from the wholesale price before applying the retailer markup. This practice has the effect of lowering the minimum cigarette price. At the time of study, New York was the only state that did not allow these types of promotional incentives to be deducted as trade discounts in the calculation of the minimum price.⁸ Research is needed to understand whether minimum price laws successfully raise cigarette retail prices, or whether their potential impact is undermined through promotional incentive programmes such as buydowns and master-type programmes. The purpose of this paper is to compare the retail price of premium cigarettes in a sample of states with and without minimum price laws. Additionally, since retail prices are also affected by promotional incentives, we also compare retailer incentive programme participation rates in states with and without these minimum price laws.

METHODS

To study the relationship between minimum price laws, retail cigarette prices, and receipt of trade discounts, data were drawn from two sources: (1) an examination of minimum price laws developed for an exploratory policy analysis funded by the California Department of Health Services Tobacco Control Section; and (2) data from a national study funded by the National Cancer Institute as part of its initiative on State and Community Interventions. The ancillary study presented here used two datasets from the national study: the *compliance check dataset*, to determine the

prices of two premium cigarette brands; and the *retail incentive interview dataset*, to identify types and amount of incentives that retailers receive from cigarette companies. The methods employed in the national study are described elsewhere.⁴

Sample

The initial sample of stores for the national study was selected using a stratified multistage clustered design to obtain a nationally representative sample of cigarette retail outlets in the continental US in communities with populations of at least 25 000 persons. Approximately 1500 retail outlets in 75 communities in 15 states were included in the study. The first stage sampling units were states, the second stage units were communities, and the third stage units were cigarette retail outlets. Thus stores were clustered within communities, which were clustered within states. For the present study we focused on approximately 1500 stores within 15 states. The number of stores per state ranged from 41–231.

Price of cigarettes

On a randomly rotating basis, the price of a single pack of Marlboro or Newport cigarettes was obtained in the course of compliance checks in 1547 stores in the summer of 2001. Active parental consent was obtained for the youth who participated in the study in accordance with Institutional Review Board policies and procedures of the Battelle Centers for Public Health Research and Evaluation. Marlboro and Newport were selected for use in the national compliance check study because they are the leading brands smoked by youth.⁹ The mean state cigarette excise tax amount in states with a minimum price law was \$0.77, and was \$0.53 in states without a law. Therefore, the current study used cigarette prices excluding sales tax and state excise tax. In the states with a minimum price law, the state excise tax amount to be removed was adjusted for wholesale and retail markups. As there was variation in the wholesale and retail percentage markups, we used the midpoint value of the range of markup percentages in our computation of price. Thus to remove the full effect of state excise tax when a minimum price law existed, the base state excise tax amount was first increased by 4% to adjust for wholesaler markups (the midpoint between 2% and 6%), and the resulting amount by an additional 7.5% (the midpoint between 5% and 10%) to account for retailer markups, with the exception of Massachusetts which had a 25% retailer markup. The final adjusted amount for state excise tax was then subtracted from the retail price without sales tax to yield the price of a pack of cigarettes with sales and state excise tax removed. The adjustment for markups was not made in states without a minimum price law, as prices in these states were naturally occurring, and not subject to price formulas for state excise tax that incorporated wholesale and retail markups.

Incentive participation

In autumn 2001, stores with completed compliance checks were contacted and 524 retailers completed a telephone interview about participation in cigarette company incentive programmes, such as promotional allowances and buydowns. A verbal consent script approved by the IRB was read to retailers and consent was granted before commencing the interview. Merchants received a \$20 money order as compensation for completing the 10–20 minute interview. As part of the retailer interview, respondents answered questions regarding cigarette company incentives and contractual programmes. Separate questions asked whether the store currently received any buydowns or had a contract with any tobacco manufacturers. The overall completion rate for

the interviews was 33.5%. By state, completion rates ranged from 21.8–50.8%.

Minimum price laws

Eight of the 15 states in the national study were found to have minimum price laws (Delaware, Kentucky, Massachusetts, Nebraska, New York, Ohio, Pennsylvania, and Wisconsin), according to a report on minimum price laws developed by the Research Department of the Minnesota House of Representatives.⁷ In summer 2002, legal researchers at the Technical Assistance Legal Center at the Public Health Institute then reviewed the minimum price laws in these eight states (DE State Code, Title 6, Chapter 26, Sections 2601–2608; KY Revised Statutes, Chapter 365.260–365.380; General Laws of MA, Chapter 93, Sections 14E–14K and Chapter 64C, Sections 13–21; NE State Code, Sections 59–1501 to 59–1518; NY State Consolidated Laws, Tax, Article 20-A, Sections 483–489; OH Revised Code, Title 13, Sections 1333.11–1333.21; PA State Code, Title 72, Sections 202-A to 230-A; and WI Statutes, Chapter 100, Section 30). Key provisions were compared including: history of the law, exclusions, formulas for calculating minimum price, minimum wholesaler and retailer markups, penalties for non-compliance, and the enforcing agency.

To assess the representativeness of our sample of states, we used 2000 US Census data to compare the eight study states with a minimum price law to the 17 non-study states with a minimum price law. Similar comparisons were made for states without a minimum price law. Statistical tests were conducted on 17 Census variables assessing state level sociodemographic characteristics (for example, age, sex, racial/ethnic composition, household/family composition, education, and income/poverty). Out of a total of 34 tests conducted, none of these were significant at the 0.01 level. We used the more stringent *p* value of 0.01 because of the number of tests performed.

Analysis

Descriptive statistics were computed for price of cigarette by brand, and for retailer participation in two types of cigarette company incentive programmes: buydowns and master-type volume discount programmes (referenced as contracts in this study) stratified by whether the state had a minimum price law.

We sought to determine whether state minimum price laws were related to the price of a pack of cigarettes and incentive participation rates. Because of the nested nature of the data, tests for differences in price and participation rates in incentive programmes between states with and without minimum price laws required a multilevel modelling approach. A total of four multilevel models were generated: separate models for price of Marlboro and Newport, and for participation in buydowns and contracts.

The multilevel models can be conceptualised as having two levels: stores at level 1, and states at level 2. The outcome measures were price of a single pack of cigarettes and participation in incentive programmes, both level 1 variables. There were no level 1 predictors, however the level 1 intercept was allowed to randomly vary across states. At level 2 the sole predictor was whether or not the state had a minimum price law. Thus level 1 intercepts, or state averages, were predicted by state minimum price law status. The primary interest of the model was the cross level relation between state minimum price law and the level 1 intercept. The level 2 intercept represented the estimated average price of a pack of cigarettes in states without a minimum price law, and the regression coefficient for state minimum price law status represented the difference in price for states with a law versus those without a law. The level 2 coefficient in the

incentive models represented the difference in mean participation rates across states. All associated tests of statistical significance were two tailed. As stated previously, in states with a minimum price law, the state excise tax amount removed from the retail price was adjusted for wholesale and retail markups. Although not presented in tables, additional models were run using adjusted price values computed with the minimum and maximum wholesale and retail markup values.

To assess whether the prices and retailer participation in incentives of New York stores were different from stores in the other states, independent sample two tailed *t* tests and simple logistic regression models were generated.

Descriptive statistics and store level analyses were performed using SPSS 10.0 for Windows. Multilevel modelling analysis was performed using HLM5.05.

RESULTS

Table 1 presents descriptive statistics for the prices of two premium cigarette brands in our sample of stores. The observed price of Marlboro was virtually equal in states with and without a minimum price law, in New York the price was 13 cents higher. The price of Newport was 9 cents lower in states with a minimum price law than in states without a law, in New York the price was 8 cents higher. For each of these prices, the state excise tax has been removed.

Table 2 presents descriptive statistics for retailer participation in cigarette company incentive programmes. Of the stores in states without a minimum price law, 66% received buydowns compared to 55% of stores in states with a minimum price law, and in New York 41% of stores received buydowns. Participation in master contracts followed a similar pattern with 61% of stores in states without laws participating, 49% of stores in states with a minimum price law, and 38% of stores in New York.

Table 3 displays four multilevel models with price of Marlboro and Newport as the outcome in the first two models, and buydown and contract participation as the outcomes in the third and fourth models. In all multilevel models, the variance estimates for the level 1 intercepts significantly differed from zero, indicating the existence of random variation in the outcomes across states. The estimated mean price for Marlboro in a state without a minimum price law was \$3.02 and for Newport was \$3.08, which did not differ significantly from prices for these brands in states with a minimum price law (*p* = 0.96 for Marlboro and *p* = 0.34 for Newport). For states without a minimum price law, 67% of stores participated in buydowns, and 60% had contracts, which did not differ significantly from states with a minimum price law (*p* = 0.06 in buydowns and *p* = 0.17 in contracts). These models were replicated using adjusted price values computed with minimum and maximum wholesale and retail markups (data not presented). The conclusions from the models with price computation using minimum and maximum values for markups did not differ from those presented in table 3, which used markup midpoints for price computations.

Prices for both Marlboro and Newport were significantly higher in New York stores compared to all other stores (*t* values: –3.18 and –3.28 for Marlboro and Newport, respectively, *p* < 0.00) (data not presented). Using simple logistic regression, the odds of participation in buydowns was significantly lower in New York stores compared to all other stores (odds ratio 0.42, *p* = 0.031). However, no significant difference was found in contract participation.

DISCUSSION

The findings from this study indicate that cigarette prices with excise taxes removed do not differ in states with and

Table 1 Descriptive statistics for the price of one pack of cigarettes (sales and excise taxes removed) by presence of state minimum price law (data collected June–October 2001)

	State's status with respect to minimum price law*	n	US\$ mean	SD	Minimum	Maximum
Marlboro	No	348	3.05	0.40	1.90	4.12
	Yes	277	3.04	0.37	2.01	3.80
	New York	60	3.18	0.33	2.01	3.76
Newport	No	339	3.12	0.40	2.03	4.12
	Yes	284	3.03	0.36	1.86	4.14
	New York	58	3.20	0.28	2.41	3.76

*Seven states do not have minimum price law and eight states have minimum price law. New York has the most stringent minimum price law, and it is included in the "yes" group.

without minimum price laws. Prices may not be higher in minimum price states because nearly all of the minimum price laws allow promotional incentives such as buydowns and master-type programmes to be deducted as trade discounts in formulas for establishing the minimum cigarette price. In New York, the one state at the time of the study that did not allow these types of promotional incentives to be factored into its formula, cigarette prices were significantly higher. The New York results should be viewed with some caution though because the number of New York stores participating in the study was small and other factors such as cost of living may be contributing to higher prices (even though sales and state and local excise taxes were removed).

There were no significant differences in retailer participation in promotional incentive programmes in states with minimum price laws, with the exception of New York where retailers were significantly less likely to participate in buydowns; however, their participation in contracts such as master-type programmes was not significantly different from retailers in other states. Of note, about 40% of the New York retailers reported participation in both types of promotional incentive programmes, which may indicate a lack of compliance with the state law.

Aside from potentially increasing cigarette prices, strict minimum cigarette price laws that also ban promotional allowances may have the added effect of reducing the amount of in-store cigarette advertising. Stores participating in buydowns and master type programmes display significantly more cigarette advertising than non-participating stores.⁴ A Philip Morris document indicates that the company is well aware of the implications that minimum price laws will affect point-of-sale advertising.¹⁰ Keeler and colleagues found that increases in tobacco advertising following the

Master Settlement Agreement may have dampened the magnitude of decreases in cigarette consumption that were expected.¹¹ It is likely that minimum price laws that eliminate promotional incentives to retailers will reduce the amount of retail cigarette advertising associated with these price reduction strategies.

There are political challenges to strengthening minimum prices laws and efforts to do so in two states have been contentious. After the state of New York adopted regulations that prohibited the use of promotional allowances including buydowns,⁸ Lorillard Tobacco Company sued the state in 2001. The Court of Appeals of New York subsequently upheld a lower court ruling in the state's favour, declaring that the application of the state law to such programmes was permissible.^{12–13} In 2002, the Massachusetts Department of Revenue attempted to eliminate the use of cigarette retail promotional allowances, including buydowns, claiming that these violated the terms of the state's fair pricing law.¹⁴ In response to a strong lobbying effort by retailers and merchant associations, the Department of Revenue rescinded the regulations^{7–15} but subsequently adopted and initiated enforcement of the more stringent regulations starting 1 October 2003.^{16–17} Because our data were collected before adoption of these more restrictive regulations, their impact on cigarette prices is not known.

Half the states in the USA with minimum price laws in effect have the opportunity to restrict cigarette company promotional incentive programmes by strengthening their current minimum cigarette price laws to be more akin to those in New York or Massachusetts. The other half of the states with no minimum price laws could enact such laws. Although substantial political opposition may come from cigarette manufacturers, wholesalers, retailer associations, and chambers of commerce, the experiences in these two states suggest that it is possible to strengthen regulations to prohibit manufacturer promotional programmes.

Given the limitations on the regulation of cigarette advertising, minimum price laws may be one of the few vehicles available to accomplish reductions in cigarette advertising at the point of sale. There is a risk that newly adopted minimum price laws or strengthened versions of existing laws could be challenged as pre-empted by the Federal Cigarette Labeling and Advertising Act (FCLAA), although this has not been raised as an issue in New York or Massachusetts. The FCLAA is a federal law that prohibits any state or local law limiting cigarette "advertising or promotion" if such a law is "based on smoking and health".¹⁸ If a state minimum price law is challenged, a court would only find the law pre-empted if it intruded on *both* elements of the FCLAA—that is, (1) the state law regulates "advertising or promotion" and (2) the state law is "based on smoking and health".

Table 2 Descriptive statistics for retailer incentive participation by presence of state minimum price law (data collected June–October 2001)

	State's status with respect to minimum price law*	n	% participate	SD
Buydown	No	224	0.66	0.47
	Yes	205	0.55	0.50
	New York	27	0.41	0.50
Contract	No	203	0.61	0.49
	Yes	188	0.49	0.50
	New York	26	0.38	0.50

*Seven states do not have minimum price laws and eight states have minimum price laws. New York has the most stringent minimum price law, and it is included in the "yes" group.

Table 3 Multilevel models with price in US\$ and incentive participation as outcomes and state minimum price law category as level 2 predictor

	Coefficient	SE	p Value
<i>Cigarette price, \$</i>			
Marlboro			
Intercept, level 2	3.02	0.05	0.000
Predictor: state has a law	0.00	0.07	0.960
Sample size: level 1 n = 625, level 2 n = 15			
Newport			
Intercept, level 2	3.08	0.05	0.000
Predictor: state has a law	-0.07	0.07	0.341
Sample size: level 1 n = 623, level 2 n = 15			
<i>Incentive participation, proportion</i>			
Buydown			
Intercept, level 2	0.67	0.04	0.000
Predictor: state has a law	-0.12	0.06	0.064
Sample size: level 1 n = 429, level 2 n = 15			
Contract			
Intercept, level 2	0.60	0.06	0.000
Predictor: state has a law	-0.11	0.08	0.167
Sample size: level 1 n = 483, level 2 n = 15			

As to the first element, state laws that merely set a minimum price for cigarettes and do not directly limit cigarette marketing practices, such as buydowns, should not be pre-empted by the federal law because they do not regulate “advertising or promotion”, only the price of cigarettes. Regarding the second element of the federal law, even if a minimum price law is deemed to regulate cigarette “advertising or promotion”, the law still would not be pre-empted by the FCLAA unless it is also found by a court to be “based on smoking and health”. Laws that merely set a minimum price in order to reduce unfair competition (as nearly all of the existing laws are designed to do) should not be found to be “based on smoking and health”. Nevertheless, the law in this area is still developing. No court has addressed minimum price laws in the context of federal pre-emption or whether a minimum price law that effectively prohibits “buydowns” could be considered a regulation of cigarette “promotions” under the FCLAA. Advocates are encouraged to consult an expert in tobacco legal issues before drafting a new law.

There are several limitations to this study. While the cigarette price data were collected from a nationally representative sample of stores in the continental US from communities with populations of at least 25 000 persons, the sample of stores that participated in a survey about cigarette company incentive programmes was much smaller because of a relatively low response rate. Also, we did not assess compliance with the minimum price laws by comparing the published minimum price in each state against the prices that we observed. Our approach to removing the “effect” of state excise taxes when a minimum price law existed included the use of estimated values for wholesale and retail markups. Moreover, a constant markup value was applied across all stores and states, with the exception of Massachusetts for which a different but constant within state retail markup value was used. In reality, wholesale and retail markup values vary, and such variation would change the price of cigarettes. However, obtaining actual wholesale and retail markups was beyond the scope of the current study. It is noteworthy that the same conclusions are made with models using price computed with minimum and maximum markup values. Future studies of these types of laws should sample all states in the USA and price data should be collected on more than two brands to further examine price differences in states with and without minimum price laws. Further

investigation into compliance with minimum price laws is also warranted.

Thus far, we have described some of the benefits and drawbacks of a minimum price strategy. Raising cigarette excise taxes is another policy strategy that can affect cigarette prices and numerous studies confirm that higher taxes reduce smoking.^{19–21} Given the budget shortfalls that faced state governments from 2002 to 2004, it was not surprising that over 30 states raised their cigarette excise tax during this period.²² However, this flurry of activity is unlikely to be repeated if the economy rebounds.

We are not certain whether it is easier or more difficult to implement changes to minimum price laws than raising excise taxes through state legislatures. However, we believe that these two strategies each have strengths and weaknesses. Minimum price laws are based on percentage

What this paper adds

Minimum cigarette price laws were originally passed to protect small independent retailers from predatory pricing strategies of large corporate competitors. Half of US states currently have these laws, which set minimum cigarette prices by applying a predetermined formula to the manufacturer’s invoice price for cigarettes. There is speculation that cigarette prices are higher in states with these minimum price laws, which could potentially improve public health by leading to reduced cigarette consumption. Currently, there are no studies comparing cigarette prices in states with and without this type of law.

This study compared retail cigarette prices in 15 states and found no difference in cigarette prices based on whether or not the state had a minimum price law. This lack of difference in price may be attributable to the fact that most existing minimum price laws allow cigarette companies to artificially lower the invoice price by permitting them to deduct price discounts given to retailers that are part of promotional incentive programmes. However, one of the eight states with a minimum price law in this study did not allow this practice and cigarette prices were significantly higher in this state. This suggests that these policies may have the potential to lead to higher cigarette prices and lower cigarette consumption.

markups on wholesale prices, so minimum prices will rise as the manufacturer's list price rises over time. In contrast, excise taxes are generally a predetermined amount (for example, \$1.00 per pack of 20 cigarettes) and lose their value over time as inflation occurs. On the other hand, excise taxes generate revenue and many legislatures have earmarked these funds for state tobacco control programmes, public health programmes, and the general fund. In contrast, when prices are raised through minimum price laws, either the wholesaler or the retailer gets to keep the increased amount. In other words, tobacco sellers benefit rather than state governments and public health programmes.

Tax increases are often passed on to consumers, but Keeler and colleagues also found that retail prices can be lowered in response to state and local tobacco control laws.²³ Keeler's findings are consistent with those found in tobacco industry documents⁶ where the use of promotional incentives for these purposes was also confirmed. Further, Chaloupka and colleagues concluded that future tobacco control efforts should attempt to both raise prices and limit price related marketing strategies. It would appear then that excise tax increases coupled with strict minimum price laws would have the greatest impact on increasing cigarette prices and reducing cigarette consumption.

Some caution is warranted because broad adoption of more stringent minimum price laws may unintentionally stimulate the use of alternative sources of cigarette purchases. For example, retailers and tobacco industry representatives in Massachusetts claimed that smokers attempted to purchase cigarettes across the state border and via the internet when the state started enforcing its minimum price law.¹⁷ Recent evidence from New Jersey shows that more smokers turned to purchasing cigarettes on the internet after that state increased its state cigarette excise tax to the highest in the country.²⁴ It is also possible that manufacturers could make across-the-board cuts in the invoice price if minimum price laws eliminated all price reductions at the retail level. However, manufacturers might hesitate to do this because they would lose control of how their products are marketed on store shelves.²⁵ Politically, many state legislatures may lack the will to stave off the considerable pressure from cigarette companies and retailers.

Nevertheless, we believe that minimum cigarette price laws warrant further examination because they may provide one of the few vehicles available to place limits on both tobacco industry advertising and pricing practices in the retail outlet.

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